Smart Q TECHNOLOGY

Balance Adapter for the Ohaus® Traveler and SciChem SL range of top-pan balances

▶ *(Product No 3065)*

Ohaus® Traveler series ranges:
TA 152	150.00 g
TA 303	300.00 g
TA 301	300.0 g
TA 501	500.0 g
TA 1501	1,500.0 g
TA 3001	3,000.0 g
TA 5000	5,000 g

Scientific & Chemical SL ranges:
SLS 502	500.00 g
SLS 1501	1,500.0 g
SLS 3001	3,000.0 g
SLS 6001	6,000.0 g

Note: *Balances must be software revision* **Sr 1.10** *or higher*

◆◆◆ DATA HARVEST

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DS 071   *No 2*

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Introduction

The *Smart Q* Balance Adapter *(Product No. 3065)* can be connected to the following models of the Scientific and Chemical SL range or Ohaus® Traveler range of top-pan loading balances **(Sr 1.10 or higher)** to collect mass data:

SciChem SL range MODEL No	CAPACITY	READABILITY
SLS 502	500 g	0.01 g
SLS 1501	1,500 g	0.1 g
SLS 3001	3,000 g	0.1 g
SLS 6001	6,000 g	0.1 g

OHAUS Traveler MODEL No	CAPACITY	READABILITY
TA 152	150 g	0.01 g
TA 302	300 g	0.01 g
TA 301	300 g	0.1 g
TA 501	500 g	0.1 g
TA 1501	1,500 g	0.1 g
TA 3001	3,000 g	0.1 g
TA 5000	5,000 g	1 g

The software revision number is displayed when you switch the balance on. If the revision number of your balance is less than **Sr 1.10,** you will **not** be able to use it with this Adapter.

Please refer to the manual (supplied with the balance) for instructions on operating the balance.

When the Balance Adapter is fitted to a balance a serial (RS232) menu is added to the balance's menu structure. Once configured to the correct parameters it can be used like other *Smart Q* Sensors.

The Balance Adapter has a small microprocessor that converts the output from the balance into an **EASY**SENSE signal. **EASY**SENSE will display and log the reading from the balance so preserving the integrity of the data.

## Fitting the Balance Adapter to a balance
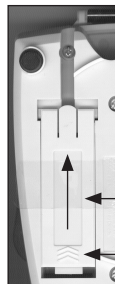
Electrostatic Advice

The Balance Adapter contains electrostatic sensitive components and is shipped in protective anti-static packaging. The back of the Adapter is an exposed circuit board; avoid touching the board and the electronic component pins.

When not in use keep the Adapter in its anti-static packaging and only remove from the packaging immediately prior to installation. The Adapter is best left fitted but if removed should be stored in an anti-static bag. Do not store near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

- Turn the balance upside down; check the shipping lock is in the locked position (pointing towards the closed padlock mark).

Shipping lock

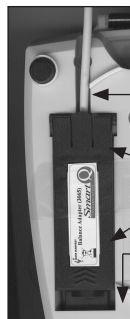Battery compartment

RS232 socket

Lock menu switch
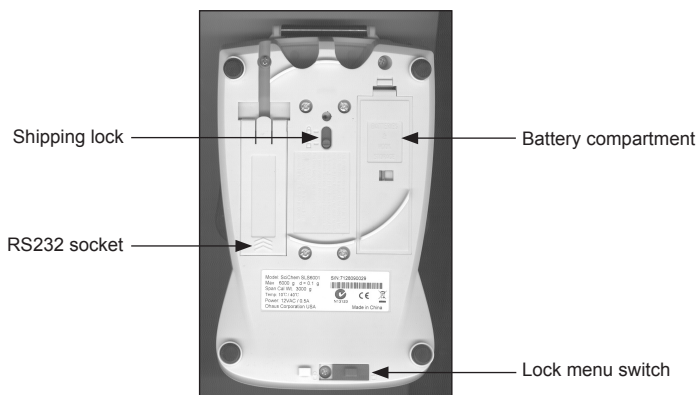
- Unplug the AC adapter from the jack at the rear of the balance (if connected).

- Remove the RS232 blanking plate by pushing down slightly on the moulded arrows and then sliding the plate away from you. Lift the blanking plate out of the socket.

3. Lift the plate out

2. Slide the plate

1. Push down here

- Hold the Balance Adapter by the plastic case and place into the RS232 socket (avoid touching the Adapters exposed circuit board). Locate the lead from the Adapter into the groove in the moulding.

- Push down gently on both ends of the Adapter (the moulded arrow and cable end) and slide the Adapter gently towards you (the two small projecting lugs need to slip under the plastic of the case) - there will be slight resistance as the Adapter locks into place.

1. Locate lead in groove

2. Push down gently on both ends

3. Slide down into place

- Release the shipping lock (pointing towards open padlock) and turn balance the right way up.

- Connect the AC adapter (supplied with the balance) to the jack at the rear of the balance.

To configure the balance to operate with the Balance Adapter

The balance will need to be configured to work with the *Smart Q* Balance Adapter. The balance will retain the settings unless they are deliberately altered.

Note: *These settings will **not** be lost when the balance is switched off or its power disconnected.*

When the Balance Adapter has been fitted, the balance will recognise and add RS232 default parameters to its menu structure. The communication settings for the Balance Adapter are: RS232 = ON, Baud = 2400, Data/Parity = 8-none, Handshake = none, Print = Stable Off, A-Print Off. Theoretically only the Parity setting needs to change from the RS232 default parameters but it is best to check all settings.

## To set the communication settings:

1. Check the lock switch (a slide switch found underneath the front of the balance) is in the **off** position (unlocked padlock symbol).

2. Switch the balance **OFF** (press and hold down the **On-Zero Off** button until it shows OFF).

3. Press and hold down the **On-Zero** button (the balance's revision number is displayed and then a count down from 4 till 1), when the display shows **S.E.t.U.P** release the button.

   Note: *The software revision number (Sr) must be 1.10 or higher to work with the Balance Adapter.*
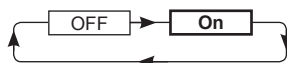
4. Press and release the **Unit** button until the display shows **r.5.2.3.2.** Press and release the **On-Zero** button to select.
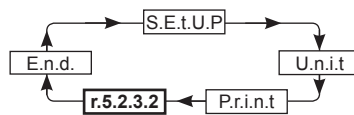
5. The display should show **On-OFF** (if not press the **Unit** button until it does). Press and release the **On-Zero** button to select.
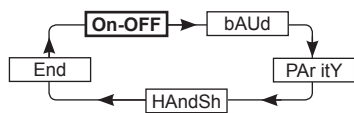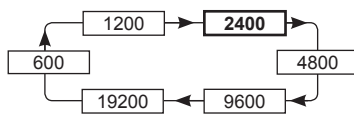

6. Press the **Unit** button so the display shows **On**. Press the **On-Zero** button to select. The display will go back On-OFF.

7. Press the **Unit** button once so bAUd is displayed. Press the **On-Zero** button to select.

8. Press and release the **Unit** button until the display shows **2400**. Press the **On-Zero** button to select. The display will go back to bAUd.
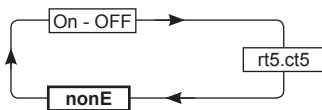

9. Press the **Unit** button once so the display shows **PAr itY**. Press the **On-Zero** button to select.

10. Press the **Unit** button until the display shows **8-nonE**. Press the **On-Zero** button to select. The display will change back to PAr itY.
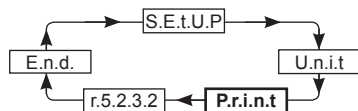

11. Press the **Unit** button once so the display shows **Hand5h**. Press the **On-Zero** button to select.

12. Press the **Unit** button until the display shows **nonE**. Press the **On-Zero** button to select. The display will change back to Hand5h.
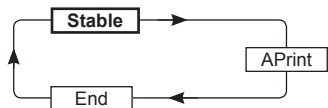
```
On - OFF  →
          →  rt5.ct5
nonE      ←
```

13. Press the **Unit** button so the display shows **End**. Press and release the **On-Zero** button to select. The display will show r.5.2.3.2.

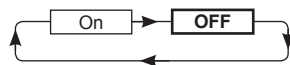14. Press and release the **Unit** button until the display shows **P.r.i.n.t.** Press and release the **On-Zero** button to select.
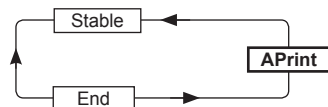
```
        S.E.t.U.P
E.n.d.            U.n.i.t
    r.5.2.3.2  ←  P.r.i.n.t
```

15. Press and release the **Unit** button until the display shows **Stable**. Press and release the **On-Zero** button to select.

```
Stable
        APrint
End
```

16. Press the **Unit** button until the display shows **OFF**. Press and release the **On-Zero** button to select.

```
On  →  OFF
```

17. Press the **Unit** button so the display shows **APrint**. Press and release the **On-Zero** button to select.

```
Stable  ←
        APrint
End
```

18. Press the **Unit** button until the display shows **OFF**. Press and release the **On-Zero** button to select.

```
        OFF  →  Cont
60 SEC
30 SEC         on.StbL
  15 SEC  ←  5 SEC
```
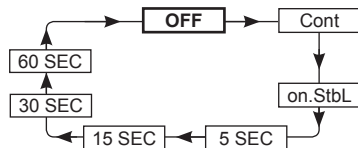
19. Press the **Unit** button until the display shows **End**. Press and release the **On-Zero** button to select.

20. Press the **Unit** button until the display shows **E.n.d.** Press and release the **On-Zero** button to save the settings in the balance.

The balance will now be set to work with the Balance Adapter.

When the Balance Adapter has been connected to **EASY**SENSE there will be a delay of up to 20 seconds before full communication is established. During this time the **EASY**SENSE unit may show a false reading e.g. the maximum mass of the balance. Wait **20 seconds**, if the communication protocols have been set correctly the balance will alter to show the correct reading.

If the communications protocols are not set correctly, the **EASY**SENSE unit will not

be able to interpret the readings sent by the balance and will continue to output the **maximum mass of the balance** (regardless of the mass being weighed).

Connecting the Adapter

- Make sure the Balance is connected to its power supply and is switched ON.

- Connect a sensor cable (supplied with the **EASY**SENSE unit) to the input socket on **EASY**SENSE with the locating arrow facing upwards.

- Plug the other end of the sensor cable (male connector) into the socket (female) on the end of the Balance Adapter cable (locating arrows on both facing upwards).
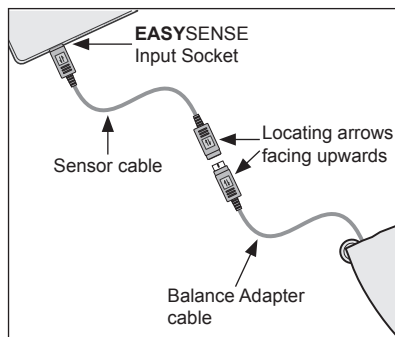

When the Balance Adapter has been connect to **EASY**SENSE there will be a delay of up to 20 seconds before full communication is established. Wait **20 seconds** and then select the correct range for the Balance model in use.

To set the range

SciChem SL Range MODEL No	CAPACITY
SLS 502	500.00 g
SLS 1501	1,500.0 g
SLU 3001	3,000.0 g
SLU 6001	6,000.0 g

OHAUS Traveler MODEL No	Capacity
TA 152	150.00 g
TA 302	300.00 g
TA 301	300.0 g
TA 501	500.0 g
TA 1501	1,500.0 g
TA 3001	3,000.0 g
TA 5000	5,000.0 g

Check the model of your Balance (this is normally printed on a label underneath the balance).

You will need to select this model number as a range for the Balance Adapter e.g. for the Scientific and Chemical Model No SLS 502 you will need to select the SLS 502 500.00 g range.

The range can be selected in **Sensor config** from the **Settings** menu in the **EASY**SENSE program:

- Connect the Balance Adapter to the **EASY**SENSE unit.
- Start the **EASY**SENSE program and select one of the logging modes from the Home page e.g. EasyLog. Select **Sensor Config** from the **Settings** menu.
- Select the Balance Adapter from the list (it will be listed using its current range) and click on the **Change Range** button.
- The current range will be highlighted. Select the required range and click on OK.
- Close Sensor Config. Click on New 🗋 and then Finish for the change in range to be detected by the logging option.

Set Sensor Range

Sensor 1

Select Range:

Balance Adaptor

SLS502 500.00g
SLS1501 1500.0g
SLS3001 3000.0g
SLS6001 6000.0g
TA152 150.00g
TA302 300.00g
TA301 300.0g

OK
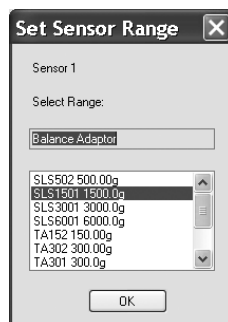
The range setting will be retained until changed by the user. With some **EASY**SENSE units it is possible to change the range from the unit. Please refer to the **EASY**SENSE unit's user manual.

Using the balance with Adapter after the initial setup

After the Adapter has been fitted, the settings altered and the range set to the correct model: -

1. Plug the AC power adapter supplied with the Balance into the jack at the rear of the balance.

2. Use a short-press on the **On-Zero** button to turn the balance on.

   Note: *The Balance Adapter will not be recognised by the **EASY**SENSE unit unless the balance is both **powered** and switched **on**.*

3. Connect the Balance Adapter to the **EASY**SENSE unit. Wait for 20 seconds for communication to be established.

   Note: *If an option in the **EASY**SENSE software e.g. EasyLog, is opened with the Balance switched off, the software will behave as if 'No Sensor' is connected. Press the On-Zero button on the Balance to switch it on, wait 20 seconds, click on New 🗋 and then Finish for the sensor to be identified.*

Practical information

The communication settings for the *Smart Q* Balance Adapter are:
RS232 = ON
Baud = 2400
Data/Parity = 8-none
Handshake = None
Print = Stable Off
A-Print Off

The Balance Adapter operates when the units of measurement are in **grams** (g).

This Balance Adapter *(Product No. 3065)* is **not** suitable for use with an Ohaus Scout Pro balance; it requires the *Product No. 3060* Balance Adapter.

The software revision number of your Scientific and Chemical SL or Ohaus® Traveler balance must be **Sr 1.10 or higher** to work with this Adapter. If your balance has a revision number less than **Sr 1.10**, contact the supplier of your balance to ask for an update.

The Adapter can only be used with the models of balances quoted. It will **not** be possible to modify this Adapter for any new model of balance that may be introduced.

The Balance Adapter uses power from the balance and therefore will not be recognised by the **EASY**SENSE unit until the balance both powered and switched on.

If the balances Auto-Off mode (A-OFF) is set to On the balance will automatically switch off after no activity is detected for 4 minutes. If the balance switches off during a recording then the reading from the balance will drop to minimum of range. We therefore recommend that Auto –Off is set to OFF and the balance is powered by its AC power adapter.

After the Adapter has been fitted, the parity settings altered and any other menu changes made to the balance, you can lock out its menu mode by moving the sliding switch (located underneath the front of the balance) to the locked position. This will prevent any accidental change being made to the menus.

The stabilisation time for the balance is up to 3 seconds so a recording with a time span of less than a minute may not give meaningful results. The fastest speed that data can be captured is 50 Hz (20 ms). If an intersample time of less than 20 milliseconds is selected, then the values obtained will either default to the lowest reading on the scale or the set up will be rejected by the logger/software.

The balance will produce an error code when internal and some external problems occur with the Balance e.g. **Err 2** if it is over or under loaded (if the weighing platform is not fitted). When an error code is displayed then no data will be sent to the **EASY**SENSE unit, which will continue to report the last value recorded until the error has been corrected.

If the communications protocols are not set correctly, the **EASY**SENSE unit will not be able to interpret the readings sent by the balance and will output the **maximum mass of the balance** (regardless of the mass being weighed). Reset the communication settings (page 4).

Make sure that if the mass increases during an investigation it will not exceed the capacity of the balance.

If the balance value is lower than the Adapters minimum range then the Adapter will remain fixed at its minimum or last good value until it comes back into range.

SciChem SL Range MODEL No	Minimum and maximum limits
SLS 502	-50.00 to 500.00 g
SLS 1501	-150.0 to 1,500.0 g
SLU 3001	-300.0 to 3,000.0 g
SLU 6001	-500.0 to 6,000.0 g

OHAUS Traveler MODEL No	Minimum and maximum limits
TA 152	-15.00 to 150.00 g
TA 302	-30.00 to 300.00 g
TA 301	-30.0 to 300.0 g
TA 501	-50.0 to 500.0 g
TA 1501	-150.0 to 1,500.0 g
TA 3001	-300.0 to 3,000.0 g
TA 5000	-500 to 5,000 g

Investigations

- *Measuring reaction rates where a gas is evolved e.g. acid and magnesium*
- *Density and specific gravity investigations e.g. compare mass vs. density, specific gravity of unknown liquids*
- *Loss of mass from a burning spirit lamp/candle when heating water*
- *Increase of mass as a solute is added to a solvent (e.g. adding salt to water)*
- *Force on a conductor in a magnetic field*
- *Monitoring transpiration*
- *Studying evaporation e.g. during crystallisation or loss of mass in storage (fruit in a bowl, plant seeds as they ripen)*

Warranty

All Data Harvest Sensors are warranted to be free from defects in materials and workmanship for a period of 12 months from the date of purchase provided they have been used in accordance with any instructions, under normal laboratory conditions. This warranty does not apply if the Sensor has been damaged by accident or misuse.

In the event of a fault developing within the 12-month period, the Sensor must be returned to Data Harvest for repair or replacement at no expense to the user other than postal charges.

Note: *Data Harvest products are designed for **educational** use and are not intended for use in industrial, medical or commercial applications.*

WEEE (**W**aste **E**lectrical and **E**lectronic **E**quipment) Legislation

Data Harvest Group Ltd are fully compliant with WEEE legislation and are pleased to provide a disposal service for any of our products when their life expires. Simply return them to us clearly identified as 'life expired' and we will dispose of them for you.